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Rail Road News.

Railway Accidents in Britain for the last six Months.

By an analysis of the of the official returns, it appears that of the ninety-six persons killed and seventy-five injured on all the railways open for public traffice in Great Britain and Ireland during the half year ending 30th June, 1849, there were—

Five passengess killed, and thirty injured, from causes beyond their own control.

Seven passengers killed, and two injured, owing to their misconduct or want of caution.

Twelve servants of companies or of contractors killed, and nine injured, from causes beyond their own control.

Fifty-one servants of companies or of contractors killed, and thirty injured, owing to their own misconduct or want of caution.

Twenty trespassers and other persons, neither passengers nor servants of the company, killed and four injured, by improperly crossing or standing on the railway.

One suicide.

Total, ninety-six killed and seventy-five injured.

The number of passengers conveyed during the half-year amounted to 28,761,895.

From the above who can doubt the safety and economy of Railway travelling on well managed lines. We have no hesitation in saying that five times the number of accidents would have occurred in stages conveying the same number of passengers.

Michigan Southern Railroad.

The receipts upon this road for the three months ending 1st of November exceed $40,000 which is a handsome increase upon the receipts of the same months for previous years. The results indicate a total income for the year ending Aug. 1, 1850, of $160,000, which after deducting one-half for expenses, would pay a dividend of 10 per cent, upon the existing stock of the Company. If in the present unfinished condition of the road it can earn and pay 10, or even 8 per cent per annum to its stock-holders, it is evident that when completed in Chicago upon the direct route now contemplated, it will prove one of the most productive roads in the country.

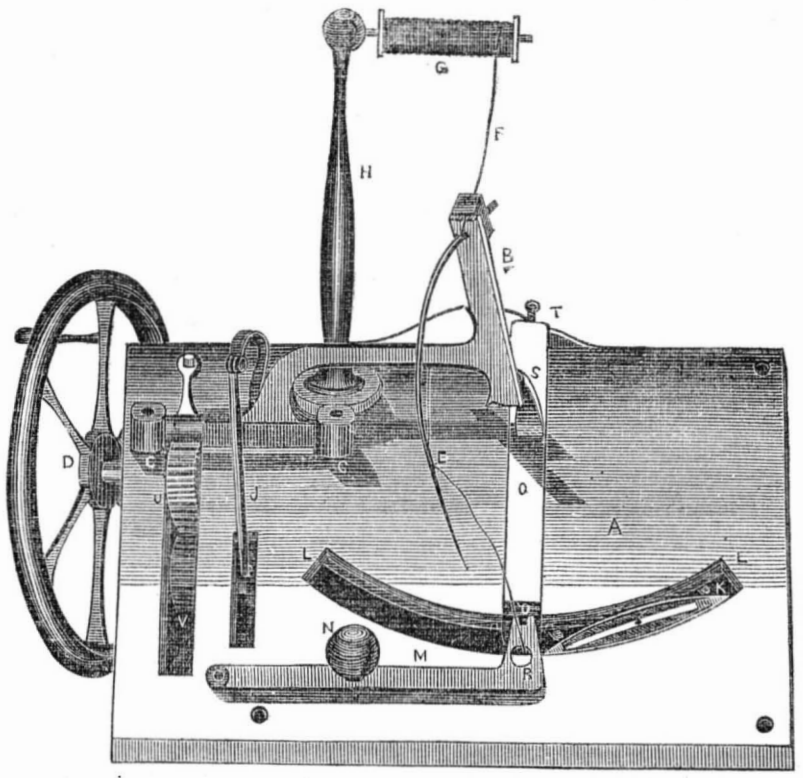
Wilmington and Roanoke Railroad.

A recent report gives the statistics of this road for the present year as follows :—Receipts $317,397; expenditures $245,998 58; profits $64,698 42; number of through passengers 11,207; number of way passengers 27,575. As compared with last year, this shows a diminution of receipts, expenditures, and passengers, and increase of the profits.

The great Tunnel on the Georgia Railroad between Dalton, Ga. and the Tennessee River has been completed. It is 1577 feet long.

A locomotive on the Rutland and Burlington Railroad, Vt., has run at the rate of 80 miles per hour

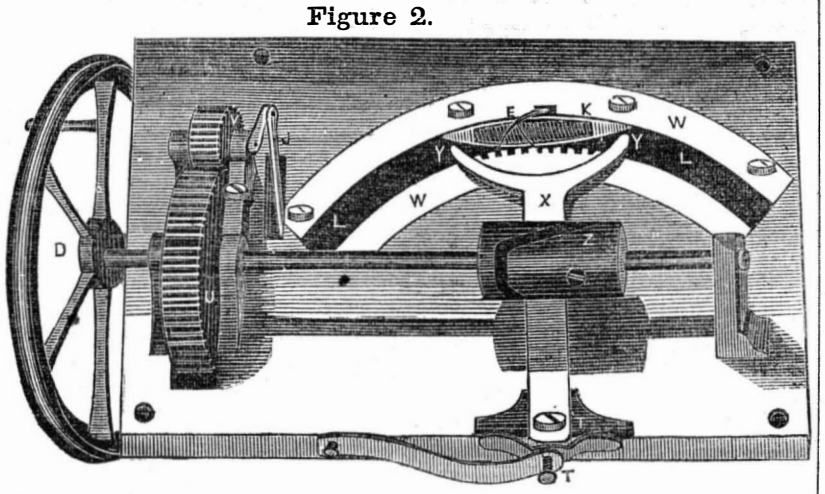
WILSON'S SEWING MACHINE.---Fig. 1.



We have already presented three different Sewing Machines to our readers; this is another one, and, as will at once be noticed by those who have seen the others, is very different from them all. The inventor is Mr. A. B. Wilson, of Pittsfield, Mass., who has taken measures to secure a patent. It employs two threads, one in a shuttle and the other in a needle, to form the lock stitch, which does not rip out. The shuttle has a reciprocating curvilinear motion, and a stitch is made during both the forward and back motion. This machine, the inventor states, can be made cheaper by one half than any other that has heretofore been produced.

Figure 1 is a top perspective view, and fig. 2 is a view of the underside—a reverse view to that of fig. 1. The same letters indicate like parts. A cavity is cut out in any table or block of wood, to receive the underparts of the machine, and the small brass plate, A, is screwed on to it, occupying no more room than a good sized pan-cake. B is the arm that carries the curved needle, E; this arm has a rocking motion up and down, to carry it with the thread through the cloth and through the small hole, R, to the inside, to be locked into the other thread by the shuttle, K. The rocking arm, B, is connected by a bridge (easily recognized) to a cross-bar that has two journals, which oscilate in bearings, C C, and to this bar, at the crook above, is connected a rod, J, that is attached to a crank under the plate—seen in fig. 2—the which crank is placed upon the axis of the pinion, V, which is geared to the larger wheel, U, fixed on the axis of the fly wheel, D. This explains how the rocking motion is given to the needle-arm; H is a post that supports the thread bobbin, G. F is one thread, passing through an eye at E,

Figure 2.



and through the cloth (no cloth shown) into the hole, R. L is the shuttle path, which is a curved slot in the plate, and on the underside, fig. 2, there are two curved steel plates, W W, screwed on the sides of the slot, projecting over the lip of it, into a groove on each side of the metal shuttle, thus snugly retaining it in its place during its movements. To give the shuttle a corresponding reciprocating motion to that of the needle, a small eccentric grooved cam barrel, Z, is secured on the shaft of the fly wheel. Into this cam barrel (but not seen, as it is below,) there is inserted a small pin, fixed on the vibrating bar, X. The bar, X, is secured on a vertical pivot axis, T 1, and therefore it receives a side to side motion, when the small barrel, Z, revolves. This bar is made to give the shuttle, K, its reciprocating motion, to coincide with the motion of the needle spoken of before, and shown in fig. 1, by two fingers, Y Y, of the bar, X, by each finger acting upon the shuttle, alternately, to push it from side to side, as the bar receives the same motion. The shuttle is now represented, in fig. 2, as passing through the top of the needle thread to lock the thread of the shuttle and the other together, then, when the shuttle is passed, (the thread in the meanwhile held in some of the notches between the fingers,) the thread is drawn back firmly to the cloth by the needle, then back the needle comes, and the shuttle back again—and so on continually, forming a stitch during both the forward and back motion. The cloth is placed under the metal plate, M, which is fixed on a pivot at one end, and is therefore slightly elastic. The cloth is placed over the opening, R, and along over the sliding bar, O, which has notches, O 1, under the bill of the plate, M. This sliding bar, O, moves in a grove in the plate, A, and it is secured to a bent spring, at the back edge of the plate, by the screw, T. By looking at fig. 2, it will be observed that the end of the bar, X, acts upon the spring at T, and gives the bar, O, a sliding motion. This feeds the cloth between the bill of M and the rack of O, and there is a small ratchet, S, on the back of the arm, B, that at every stroke acts upon the cloth below it, like a foot, to take away the sewed part from the action of the needle. The stroke of the needle and shuttle can be shortened for stitches of different lengths. N is just a small handle on the feed plate, M. From this description, it is believed, that with a little study, any of our readers will get a very good knowledge of this machine.

Useful Receipts.

To Remove a Mote from the Eye.

Noticing in a late No. of your paper directions for "removing a speck from the eye by licking it out with the tongue," I was surprised that you gave the modus operandi your commendation, even qualified as it is by the saving clause, that there are few who like to perform it. I am induced to notice the paragraph only with the view of recommending a way in all respects better, and certainly not so repugnant to good taste. It is this :—Let the patient close the eye gently, as in sleep, then with his thumb and forefinger take firm hold of the lash of the upper eye-lid, and pull the lid out from the ball, far enough to clear the edge of the lower lid, then pull the upper lid down on to the lower lid. Now, while the lid is held in this position, let him give the eyeball a rotary motion, from above in toward the nose. This will be best accomplished by keeping both eyes shut, and moving the ball of the affected eye first down, as if looking at the feet,—then out, then up and lastly toward the nose, repeating this motion until the mote is no longer felt in the eye, when it may be found in the inner corner of the eye, and may be removed by wiping it out with a clean handkerchief or the end of the finger. This process has the advantage in at least two respects over the "licking" operation. In the first place it may be performed by the sufferer himself, and in the second place it will remove objects which adhere slightly to the lid, and are concealed by them when the eye is open. The above direction, if understood and carefully followed, will save a vast amount of suffering, and frequently the necessity of applying to a surgeon or oculist. A PHYSICIAN.

Wayne Co., N. Y., Nov. 1849.

[We would state that we have seen the plan of licking out the mote prove successful when many other plans failed, and in two instances, with our own self, about twenty years ago, but we must candidly state, that the plan described by our correspondent, although first tried, was not so carefully nor scientifically performed as he describes it.

Murian in Cattle.

Many farmers are asking for curatives to arrest this almost incurable disease. Have any of them tried the juice of mandrake roots ?

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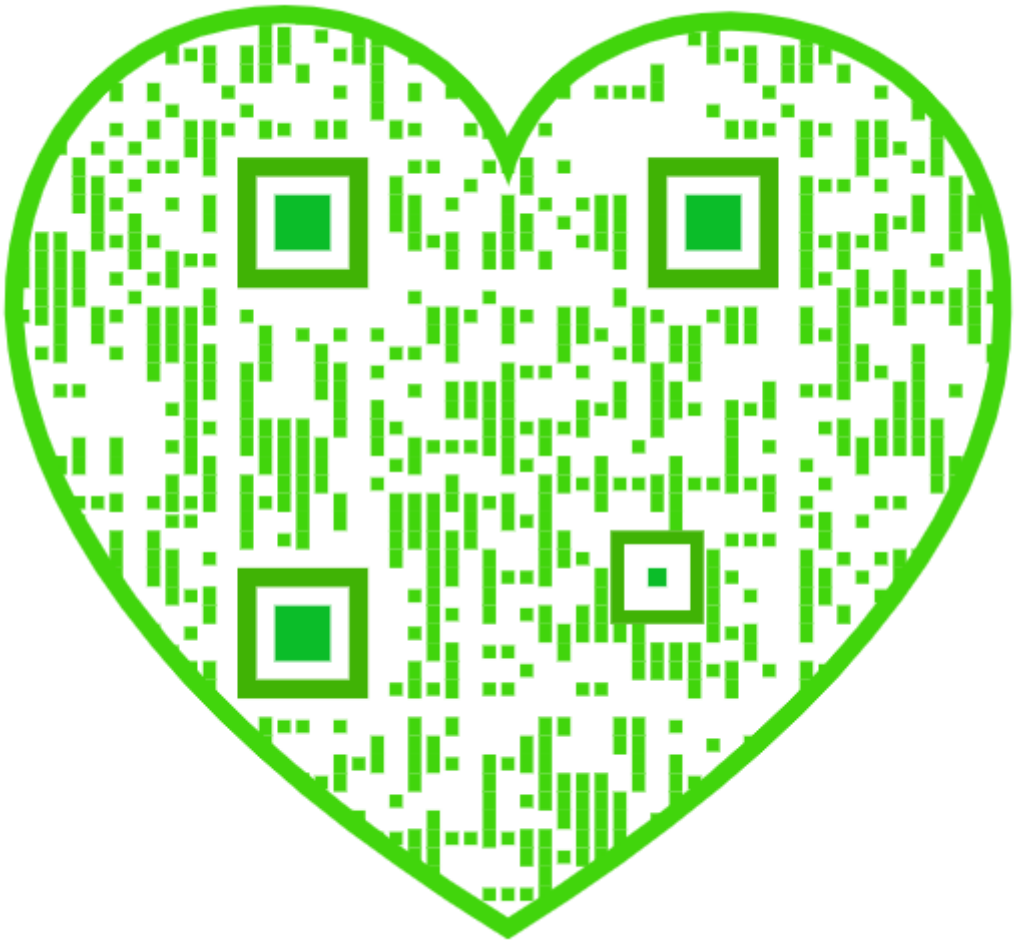

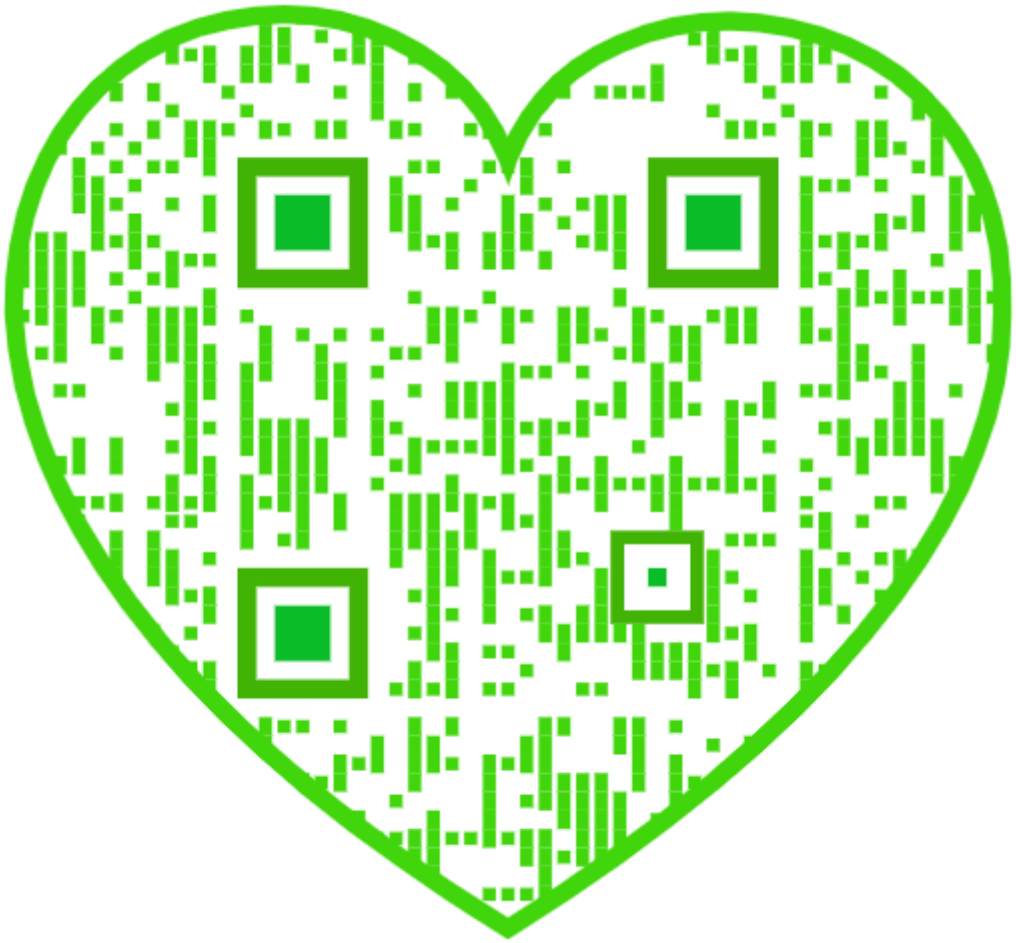

Miscellaneous.

Animalculæ of the Sea.

There are many delicate and fragile animals which live at great depths in the sea, often from 2000 to 3000 feet below its surface. These creatures, therefore have to sustain the pressure of a column of water of that height, a pressure of from 60 to 90 times greater than that of the atmosphere upon our bodies. Yet these animals are not crushed, they move about with perfect ease, under circumstances still more surprising than those under which we live.—And the reason is, that this hydrostatic pressure is equal on all sides ; the bodies of these animals are equally pressed above, below, and around, and the fluids within the annimal are also either of similiar density, or they are nearly incompressible, that all the different pressures counterbalance each other. In the same manner the fluid atmosphere presses equally in all directions, and the human body immersed in it may be compared to a sponge plunged into deep water ; it is not crushed, because the water fills the cavities of the sponge, and also surrounds it entirely. In like manner our bodies, and even our bones, are filled either with liquids capable of sustaining pressure, or with air of the same density as the external air, so that the outward is counteracted by the inward pressure. Now let us see what are the consequences of removing this pressure. Some fishes, which live at a great depths in the sea, are provided with swimming bladers, or little bags full of air. On raising them to the s rface, the water pressure is removed, and the bladder expands to such a degree as to kill the creatures instantly.

Useful Lectures.

The Rev. Henry Giles, so popular as a lecturer, is now fulfilling an engagement made with him by the mercantile Libary Association, and has commenced a series of five lectures on the agencies in social culture, classified in five distinct subjects, viz., Books, Conversation, Music, Love of the beautiful, and Ideas of Manliness. The first and second of the series were delivered on the evenings of the 13th and 20th inst. at Clinton Hall, before a large and intelligent audience. Mr. Giles' reputation as an original thinker, and felicitous speaker, is a sufficient guaranty that these lectures will amply reward all who may listen to him. His discourse upon the the subject of Books was a masterly performance, abounding in elevating thought and sound argument calculated to make an indelible impression upon thinking minds. We hope our friends will not miss an intellectural treat, of such a high character. The three remaining lectures will be delivered every Tuesday evening until completed, at Clinton Hall.

Gas—Reduction—Imposition.

The bill of gas for The Tribune Office for the month of October, 1848, was $102. The rosin gas was then at 70 cents per 100 feet.

A great display has been made about the reduction of prices since the Company have got into their new buildings, and the rates were fixed at 50 cents for coal gas. The result is, the October bill for 1849 amounts to $173 15. We consider these prices a shameful imposition on the public, and we shall be greatly disappointed if some public action be not taken to compel the Company to furnish gas at the prices it is furnished in other cities or to annul their charter.—[N. Y. Tribune.

[We believe that good gas might be produced in this city for one half of the price now charged.

A Piebald Negro.

There is a colored man belonging to Wilmington county, Del., now trading, we believe on board of a shallop between that city and Philadelphia, who is in color both white and black. He is covered over with white spots (as white as the fairest white man,) from the size of a dollar to several inches, and even feet in length and breadth. There is a white ring round each of his eyes, and also white round his mouth, one half of one of his arms is white. His predominant color is black, only about a third being white.

Natural Creation and the Law of Races.

Do the relations which exist in nature, show satisfactorily that all classes of animals, and all individual animals are partial expressions of a general thought and manifestations of immaterial reality, of a plan laid out by a supreme Intelligence ?

To establish the affirmative of this question, the various types of animals are not evolved from one another ; yet, they are the consecutive stages in one plan. All animals, therefore, are separated into classes, which can have no common material origin ; yet they belong to one plan, and point to a common issue of their series.

There are four types of animal existence, inseparably distinct, Radiata, Mollutca, Articulata and Vertebrata, we approach this conclusion by asking whether there is an intellectual connection between the types thus materially separate and incommunicable, showing that they are the connection of a preconceived, and hence intelligent and intended plan, laid out before their creation, and carried out in reality, in a succession of types?

In the succession of organized beings, we find such a progress, that tracing all these relations we arrive at man at last. He is, by structure, the highest. He is in the order of succession, the last. And as we have traced all these different connections with reference to the plan laid out at the beginning, at what conclusion do we arrive in the most direct manner ? It is, that the creation of man was the aim of the plan from the beginning. And a higher view, and without any reference to utilitarian considerations, we may say that this world has been made for man ; for man was the object which the Creator had in view, when he formed the plan for the devolopement of this globe. And if this be the case, let us never forget what a responsibility it throws upon us, to be the object of such a developement, and the close of such a magnificent construction ; and let that be the fullest evidence that man was created in the image of his God.—Prof. Agassiz.

Singular Freak of Lightning.

We learn from the Pottsville (Pa.) Emporium that during a recent thunder-storm in that place, the fluid struck the roof of a building, passed down the front and divided, passing in on both sides of the front door, through which it entered into the store, where Mr. Francis Benseman and Mr. Snyder were standing. It struck Mr. Snyder on the shoulder, completely stripping the clothes from that portion of his person, passed down his side, across his abdomen, through his pantaloons pocket where was some silver change, thence down his leg and cut through a very considerable hole which it burned in the bottom of his boot, and disappeared through the floor. Mr. Snyder was stricken down senseless and apparently dead, in which condition he remained, until some of the neighbors carried him out into the rain, which in a few minutes caused him to revive.

Mr. Bensemen was also stricken down senseless, but revived very soon, and creeping to the door, opened it making his way into the air so confused, however, by the violence of the shock as to be unconscious whither he went. His right side was considerably paralyzed.

The building was shattered from the roof to its foundation, and it seems really miraculous that the inmates were not instantly killed.—They represent that at the instant of the shock they felt as if thrown into a heated furnace, and the smell of sulphur was utterly overpowering.

Years.

Neither rouge, artificial ringlets, nor all the resources of the toilet, can retard the relentless progress of that terrible foe to beauty, Time. But every one must have noticed how lightly his hand sets upon some, how heavily upon others. Whenever you see in an old person a smooth, unwrinkled forehead, a clear eye, and a pleasing, cheerful expression, be sure her life has been passed in that comparative tranquility of mind, which depends less upon outward vicissitudes than internal peace of mind. A good conscience is the greatest preservative of beauty. Whenever you see pinched-up features, full of lines, and thin, curling lips, you may judge of petty passions, envy and ambition, which have worn out their owner. High and noble thoughts leave behind them noble and beautiful traces ; meanness of thought and selfishness of feeling league with Time to unite age and ugliness together. Fresh air, pure, simple food, and exercise, mental and bodily, with an elevated ambition, will confer on the greatest age a dignified beauty, in which youth is deficient. There are many men and women, at sixty, younger in appearance and feeling than others at forty.

Hills Against Level Lands.

A correspondent of the Gardener's (Eng.) Chronicle says :

"In a lecture on land surveying by a French Professor of mathematics, at the college at Blois, the lecturer informed his audience that in the purchase of hilly or uneven land, its extent is estimated or measured, not according to the area of the surface, but according to the area of its horizontal base ; "because," he added, "it is a well known fact in agrienlture, that no more can be grown on a hill or slope, than on a horizontal piece of land equal to its base." Now, as this "well known fact" is not only not well known, but even strongly, though in my opinion absurdly, disputed amongst many of our Yorkshire farmers, perhaps you will be kind enough to give it publicity in your next number. Perhaps of moss and other low or creeping plants, a greater crop may be grown on a slope than on a horizontal piece of land equal to its base ; but with regard to vertically growing plants such as hay-grass, corn or trees, it appears te me the French professor, was perfectly correct."

Domestic Endearments.

I hold it indeed to be a sure sign of a mind not poised as it ought to be, if it be insensible to the pleasures of home, to the little joys and endearments of a family, to the affection of relations, to the fidelity of domestics. Next to being well with his own conscience, the friendship and attachment of a man's family and dependants seems to me one of the most comfortable circumstances of his lot. His situation, with regard to either, forms that sort of bosom comfort or disquiet that sticks close to him at all times and seasons, and which, though he may now and then forget it, amidst the bustle of public or the hurry of active life, will resume its place in his thoughts, and its permanent effects on his happiness, at every pause of ambition or of business.

Chinese in California.

The population of San Francisco is composed of representatives from every quarter of the globe, and among the rest are a number of Chinese, who have come over in the character of housebuilders. They are represented to be very quiet and exceedingly industrious. They have brought the frames of their buildings along with them, which are generally about 20 feet square—one story in height—and 12 feet from the floor to the ceiling. The timbers are round, and many of them very crooked. The price of a Chinese building, such as described, including erection, is $1500. The building, however, consists of simply the frame and covering. They are brought from Hong-Kong.

London New Coal Exchange.

The floor of this edifice consists of upwards of 4,000 pieces of wood, of various kinds and qualities. The great feature of the affair is, that the whole of these pieces were only a few months since either in the tree of the growing state, or cut from wet logs, and were prepared for use in the course of a few days by a new process of seasoning. The names of the wood thus introduced are black ebony, black oak, common and red English oak, wainscot, white holly, mahogany, American elm, red and white walnut (French and English), and mulberry.

Hertz Ben Pinchase, a learned writer in the Jewish Chronicle, predicts that in less than a century a Jew will be President of the French Republic ; that in half a century America will be ruled by a son of Abraham and that in less than a quarter of a century the Lord Mayor of London will worship at the synagogue.

Notice.

We must again call upon our friends to be particular, when they address us, to give the name of the Town, County, and State in which they reside, in a clear and legible hand. It saves us much trouble, to which we are otherwise subjected. The law requires of publishers to be very particular in directing their papers ; this is necessary, especially where the town is small and little known. We are often bothered to decipher the name of correspondents—this is particularlv annoying.

To Prevent Steam Boiler Incrustation.

We see it stated that a Mr. Williams, in England, proposes to prevent incrustations by pouring a small quantity of coal-tar into the water just before the steam is to be put up.—This substance, when thrown into boiling water, parts with all its volatile constituents, and its carbon is, as a crust, depesited upon all sides of the boiler with singular uniformity adhering with great firmness to the iron plates by the peculiar action of the force which ap- to condense fluid matter on solid surfaces.—Thus a kind of graphite coating is formed, which protects the iron most effectually from corrosion.

The Benefits of Travel.

One of the chief delights and benefits of travel is that we are perpetually meeting men of great abilities, of original mind, and rare acquirements, who will converse without reserve. In these discourses the intellect makes daring leaps and marvellous advances. The tone that colours our after life is often caught in these chance colloquies, and the bent given that shapes our career.

To Destroy The Wire Worm.

To destroy the wire worm which is oftentimes very destructive to turnip and other crops, take about 100 bushels of lime per acre, broken to the size of a hazel nut, spread over the ground, and turned in with the plough,—the heat occasioned by the first shower destroys the insect, while the land has the benefit of the manure.

St. Michael Oranges.

Many of the trees bear at a hundred years old, the highly prized thin-skinned orange, full of juice, and free from pips. The thinness of the rind of a St. Michael's orange and its freedom from pips, depend on the age of the tree. The young trees, when in full vigor, bear fruit with a thick pulpy rind and an abundance of seeds ; but as the vigor of the plant declines, the peal becomes thinner, and the seeds gradually diminish in number until they disappear altogether.

Terrible Steamboat Explosion.

At New Orleans on the 16th inst., the boiler of the Steamboat Louisaina exploded as she was leaving the wharf and nearly 200 persons are supposed to be killed. This is one of the most terrible accidents that has occurred in our country. After all the Reports made to Congress, and all the laws made to prevent such accidents here is a crushing argument against the employment of high pressure. The captain has been arrested.

The Dumfries Standard, Scotland, states that a small grey plant found in mossy situations, and popularly known as the "flower of moss," has proved efficacious in curing hydrophobia. An example is related. Fifteen cows were bitten and became furious ; fourteen drank a decoction of the flower and survived ; the fifteen received none and died.

The boilers and cylinder of the steamer Neptune, sunk in the bed below the mouth of the Ohio, in the year 1829, were raised by the bell boats Submarine, Nelson and Eads, who are now wrecking her. They have not got at her valuable cargo, said to be lead—a large amount of specie. The wreck lies in twenty-eight feel water, and is filled with sand and drift wood.

The enterprising publisher of Scott's Weekly Paper, Philadelphia, announces his intention to enlarge, and, as he says, increase the attractions of his excellent paper. We think this unnecessary. In our opinion it is now one of the best, and certainly one of the cheapest, literaries in the country.

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Scientific Memoranda.

ELECTRICITY AND THE ATMOSPHERE.

As connecting itself with a subject which is now attracting the attention of most meteorological observers, the following communication of M. Matteucci is of considerable value. This electrician states that his researches upon the loss of eleciricity in the air, more or less humid, have led him to the following proposition: In air taken at a constant pressure and temperarure, the loss of electricity increases with the quantity of the vapor of water that it contains. But this increased loss does not vary according to the simple law which Coulomb believed he had deduced from a small number of experiments, viz., that this loss was proportional to the cube of the weight of the water contained in the air.

DISCOVERY OF A CURIOUS CAVE IN WALES.

Recently some miners at Llando, in Wales, broke in the course of their labors, into what appeared to be an extensive cavern, the roof of which, being one mass of stalactite, reflec ted back their lights with dazzling splendor. On examination, the cavern turned out to be an old work probably Roman; the benches, stone-hammers, &c., used by that ancient people having been found entire, together with many bones of mutton, which had been consumed by these primitive miners The bones are, to all appearance, as fresh, though impregnated with copper, as they were when denuded of their fleshy covering, after remaining, as they must have done, nearly 2,000 years in the bowels of the earth. The cavern is about forty yards long, and must be a subject of great interest to those fond of investigating the remains of bygone ages.

MAGNETIC ACTION ON RAILWAYS.

It is well known that an opinion has prevailed among scientific men for a few years, that railway axles, after having been used for some time, bec ome crystalized by galvanic action, and were then very easy of fracture. The subject was brought before the late meeting of the British Association by Mr. Greener, who, without questioning the fact, stated that the axles were affected with electricity generated by the bearings and the journal while in rapid motion. He said that by subjecting inferior iron to currents of electricity, it soon was changed into a crystaline state, and lost its tenacity. Mr. Stephenson said that it was dangerous to assume facts and reasoning from the assumptions of Mr. Greener.

With respect to the influence of vibration on the structure of iron, he considered there was good room to doubt that the bearing force or pressure upon metals caused crystallization. It was by no means proved that railway axels were subject to the passage of currents of electricity, and therefore granting the assumption that the passage of the electric current changed the character of the iron, there was a link wanting in the chain of reasoning, inasmuch as it was not proved that axles were subject to this electrical influence. Moreover he was inclined to doubt whether if a piece of iron was at first perfectly fibrous, vibration would ever change the structure of the metal. The beams of Cornish engines, for example, were subject to vast pressure, they never become crystallized, the connecting-rod of a locomotive was subject to great vibration, strain, and pressure, vibrating eight times a second when the velocity is 40 miles an hour: he had watched the wear of a rod for three years, and no change was perceptible ie the structure of the iron.

TELEGRAPHIC FEAT.

On the 1st inst., the train of cars on the Utica and Albany line, N. Y., ran off the track at Fonda, when Mr. Porter, of the Telegraph at Utica, being one of the passengers, sprang from the car and cut one of the wires, and sent an account of the accident to Utica This was done by grasping the cut wires with some non-conducting substance between the fingers, and bringing the two wires in contact to complete and break the circuit, and thus actuate the pen lever at Utica, making it write the message.

By the latest news from Europe, Kossuth was expected in England, and great preparations were made to receive him.

For the Scientific American.

Important Discovery that may Lead to Improvements of Great Value.

(Concluded from page 67.)

Before we gave the subject a careful examination, it seemed strange to our mind that circular motion should present such a phenomenon as centrifugal force, and stranger still that it should so rapidly increase, as to tear asunder the most solid body at a rate of motion not otherwise surprising.

To show that in other minds also there was some mystery or want of clearness connected with this subject, we will quote from the article on centrifugal force in Nicholson's Encyclopedia :—"All moving bodies endeavor after a rectilinear motion, because it is the easiest, shortest and most simple; whenever, therefore, they move in any curve, there must be something that draws them from their rectilinear motion, and detains them in their orbits; and were that force to cease, the moving body would go straight off in a tangent to the curve in that very point, and so would get still further and further from the focus or centre of its curvilinear motion. It may be that in a curve where the force of gravity in the describing body is continually variable, the centrifu gal force may also continually vary in the same manner, and so that one may also supply the defect, or abate from the excess of the other, and consequently the effect be every where equal to the absolute gravity of the revolving body."

In the foregoing we are told that moving bodies endeavor after, or select a straight line, because it is the shortest, easiest and most simple. It seems then, that moving bodies have an intuitive knowledge of the easiest way of accomplishing their journey. But we might enquire where the motion is perpetual, why the shortest route is easier than any other and why more simple; and how inanimate nature comes to know anything about it, for to speak of moving bodies endeavoring after a rectilinear motion, because it is the easiest, shortest and most simple, seems almost to imply intelligence in the moving body. But inanimate nature don't always follow that rule. If for instance the wire from one pole of a battery should approach within a few inches of the other pole and then pass round the State of Pennsylvania, or even wind from bottom to top of every tree in the State before it returned to the negative pole, the electricity, instead of taking that short and simple route of two or three inches, would rather climb every tree in the State by a thousand coils on each one, thus going a vast and interminable distance, for some other reason, surely, than the simplicity of the route.

And again we are told that if the central force should cease, the moving body would go straight off in a tangent to the curve in that very point, &c. Why say that *very* point, as though it were something surprising and different from what we might have expected?

And again we are told—it may be that in a curve where the force of gravity in the describing body is continually variable, the centrifugal force may also continually vary in the same manner, and so that one may also supply the defect or abate for the excess of the other.

Now if all this does not show that the subject was not clearly understood, then we do not comprehend the meaning of such language—and if they did understand it clearly, why did they not give us a rule for shaping vessels, and then the world would have been far in advance, in some important respects, beyond its present position?

Another proof that it was not understood, is found in the fact that we were told, in the common school philosophy, that Barker's reacting water-wheel is in theory one of the most powerful and, in practice, one of the weakest. Whereas if this subject had been properly understood, the theory and practice would have agreed, as our proposition or inertia rule will make most plain on applying it to that wheel.

And again :—It certainly is not generally understood that the power which breaks the bow line of a canal boat when made too suddenly fast on entering a lock, and the power that burst the cylinder of a threshing machine, or grind stone when in too rapid motion, are one and the same—perfectly identical one with the other. Neither is it generally understood that the power which impels the woodman's axe into the tree, and carries the ball from the rifle towards the clouds, in spite of air and attraction, is perfectly identical with that which forms the fulcrum to the steamboat's wheels.

We were once told by a man who has stood no lower than a Governor of a State, that the principle we speak of, so far from possessing power, was the very absence of all power. And yet so erroneous are the examples of its power continually within the reach of our sight, that the whole physical force of mankind, since the world began, would not be as a drop in the ocean, compared with the power exerted by inertia in a single second of time, for it not only continually balances the enormous weight of our globe, but uncounted millions of other orbs, and countless clouds of worlds.

(To be Continued.)

Sarsaparilla.

Dr. Dixon, in the last number of his keen-edged "Scalpel," favors his readers with a pungent and scorching review of the present Sarsaparilla system—so popular among that class whose knowledge of the ingredients of which much of it is made, extends only to the flaring advertisements heralding its existence. The Doctor makes the following bold annunciation, that "there is not a particle of Sarsaparilla in these compounds! Indeed, all the article imported into this country, would not make a tithe of what is sold under the name in this city." He says, "It would be comparatively of little consequence to the wealthy, who are paying the wages of misfortune or sin, if they were the only victims of these heartless wretches, but we confess our indignation has been excited to hear our professional friends engaged in general dispensary practice, relate instances where a wretched washerwoman, or the wife of a poor mechanic, has daily, for months together, taken one or two shillings from the hard earned wages of her husband or herself, or what is worse, from the mouths of her suffering children, to buy the precious life-giving compound. We will give her the recipe for an honest and true sarsaparilla syrup, in all sincerity, conscious of the rectitude of our intentions. The recipe we give is taken directly from the United States Pharmacopeia: the received and acknowledged guide of all our doctors and druggists. By making it as here directed, she will possess a perfectly pure syrup of sarsaparilla, for one half the price of the article that has not a particle in it. Physicians add mercury according to the effect which they wish it to produce. As to the conditions of the system, or diseases for which it is given, it would be absurd for us to say a single word, for we have given our opinion already, that as a medical agent it is utterly inert. One thing is certain, it can do no harm. RECEIPT :—Purchase of a druggist of known honesty, fifteen ounces of Para sarsaparilla; split the stalks in two, lengthwise, and cut it in short pieces. Soak it in a gallon of pure water for twenty-four hours, then boil it down to two quarts: strain, and add whilst boiling, fifteen ounces of white sugar: thicken all by a little additional boiling, precisely as you make the syrup for preserves. Here you have two quarts of pure syrup for eighty cents. The dose is from a teaspoonful to a wine-glass full, according to age, three times; but it would do no harm if taken by the tumblerfull; it is not hurtful in any dose."

[We are of the opinion that pure sarsaparilla is not an inert medical agent, although we are not prepared from observation to question the point strongly. It would appear to us as a reasonable conclusion, that in case a person should obey rigidly the laws of health, and this blessing should be the consequence, a syrup made from pure sarsaparilla would produce a change in the physical organism, would not the functions become deranged to a certain extent, when used by a healthy person? If a dose of sarsaparilla syrup would *not* produce an evil effect, and at the same time was capable of *producing* an effect—would it not be salutary? Has not experience established it as a remedial agent? We make these observations not for the purpose of attempting to contradict the opinions of so learned a man as Dr Dixon. The ideas are such as suggested themselves to us after reading his statement that it was an inert medical agent.

Original Inventors.

We have received a communication from Mr. Wm. Henson, No. 30 Commerce street, Newark, N. J., about an invention which he claims, and for which a patent was lately secured by another (no fault of the Patent office.) We, of course, express no opinion, because we cannot give one. The letter is endorsed by Mr. Henson himself, who has stated that he is willing to make affidavit to it. Here is all that we can publish of the article, and would state that a rough drawing of the invention claimed is in our possession, brought with the article by the author.

"Seeing among the list of re-issued patents, one granted to Erastus B. Bigelow, September, 18, 1849, for weaving Brussels Carpets, (attached to his patent granted March 20, 1849,) I beg to state that what he claims in that patent is etirely my own invention, that after many months' hard study and close application I matured; and I exhibited the machine with Brussels carpet on it at Newark, N. J., and afterwards at New Jork, July 20, 1848, by the advice and in the presence of George Gifford, Esq., Solicitor and Counsellor to Mr. Parkhurst, the patentee of a wool combing machine, and several other persons, who highly approved of it. Mr. Parkhurst pronounced it as far excelling any thing of the kind out. He engaged to find parties to treat with me forthe invention. To enable him to act more effectually in the business, I allowed him to take one of the main and principal parts of the invention to Lowell. Shortly after I received a letter from him stating that he had had an interview with one of the manufacturers, and found him very anxious to learn more about the invention; that he, Mr. Parkhurst, could manage the affair, as he had to see them again on the business. I was anxiously waiting to hear the result, but neither saw nor heard from him until I met him accidentally in New York in December, when he told me he could not attend to my business, if I was to give him five hundred dollars a day. I asked him to return me the part of the invention above named, which he afterwards left, with a note, at Mr. Gifford's office, for me. This principal part of the invention is a wire tube, which is fixed in front of the sley, so that the figuring warps that form the pile, may rise up between them, about the tube; the wire that forms the pile is then shot from out of its carrying tube or barrel into the wire tube, under the figuring warps that form the pile. It will now be seen that when the figuring warps descend, they will press down the wire, which will spring open the tube and let it drop into the open shed, ready to be beat up by the sley. This is my own invention, which I claim, together with the application of rollers, for drawing out the figuring wires from under the pile, and delivering them into a small tube, the length of the wires, like a pencil case, which tube conveys them to the front of the sley, and then discharges them into the wire tube named above. These are my inventions, which I exhibited at New York, as stated above, which my machine will prove, and the persons who saw it can bear witness to, and which Mr. Bigelow has claimed in his re-issued patent, under the terms equivalent, &c. W. HENSON.

Newark, Nov. 13, 1849."

[We have got a question to ask of the Patent Office, here. Does it grant patents on re-issues for things not in the model of the original patent? We have heard it asserted in a public lecture by a conspicuous patent attorney, that it did. We should like to know the truth of it. What Mr. Bigelow claims is, no doubt, his own invention, too.—Ed.]

Young Mechanics in California.

A company in this city have just purchased of Mr. Wilson, of Philadelphia, the right of the Woodworth Planing Machine for the Territories of California and Oregon. They intend to start an establishment in San Francisco at the ealiest possible period.

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New Inventions.

Improved Corn Sheller.

On our List of Patent Claims for last week, there was one of Messrs. D. W. Harris & E. P. Carter, of Yorkshire, Cattaraugus Co., N. Y., for an improved Corn Sheller. This machine, just with one man turning the handle, can shell a bushel of shelled corn in one minute, and separate it from all impurities at the same time. It is also self-feeding, and is constructed upon the most improved principles. From its real merits, we will publish an engraving of it in a short time, and enter into a full description.

Patent Churn.

Messrs. E. S. Cleveland & Co., of this city, have just negociated the purchase of the right of the State of New Hampshire for Anthony & Emerson's "Patent Double Acting Rotary Churn," and intend soon to exhibit its wondrous qualities as a rapid butter maker, for the inspection of the "Granite Boys." They will visit all the principal towns in the State, for the purpose of making sale of the town and county rights, in the course of the ensuing month. The utility of this churn has been established beyond peradventure, and has met the unqualified approval of all who have used it.

The Electric Light in Military Operations.

An experiment was lately made at Montpelier, France, which excited a consideradle amount of curiosity amongst the neighboring population. On the occasion of the annual visit of the inspector of engineers, a new apparatus was tried, the object of which is to cast a bright light to some distance, to be applied in lieu of Bengal lights, etc., used for lighting up besieging lines, roads, etc. It is an application of the galvanic light, by means of which a semicircle of about 400 yards was illuminated so strongly as to render even small objects nearly as distinct as in daylight.

Patent Improved Matches.

By our last valuable exchange, the London Patent Journal, we learn that a Mr. Knapp, chemist, has obtained a patent for the following mode of making matches :—

"Take the splints and dip them into resin oil, then put them on shelves to drip and until they are dry enough to pack."

This is the whole sum of a new patent in England, which could not be secured for less than $600—a sum for which twelve patents could be secured in the United States. Yet we are told by those who know, that most of the English patents, if they have any merit at all, pay well.

Improved Hydrant.

Mr. James Ingram, plumber in the Bowery this city, has made a valuable improvement in hydrants, for which he has applied for a patent. It is one which will no doubt command attention, as it is combined with the *screw plunger*, and in a very simple manner drains of all the back water, so that there is no fears of the pipes freezing, and it provides for taking up the valve and putting it in again in a few seconds, to repair or pack from the top of the hydrant.

Improvement in Carriage Wheels.

Messrs. J. C. & G. F. Fowler, of Newbury, Vt., have made a good improvement on carriage wheels, for whieh they have taken measures to secure a patent. It consists in having a hollow metalic hub in the inside of which the spokes are secured by screw nuts. The spokes are set into the hub upon the suspension principle.

Improved Camp and Cot Bedstead.

Mr. John H. Landell, of Newark, N. J., has made a most admirable improvement on the Cot Bedstead, for which he has taken measures to secure a patent, and which is well worthy of attention. The legs can be taken apart in a second, and it can be folded up in two halves—thus making it into a camp stool, or capable of packing it up in a very small space for transit, or to occupy little room in a chamber

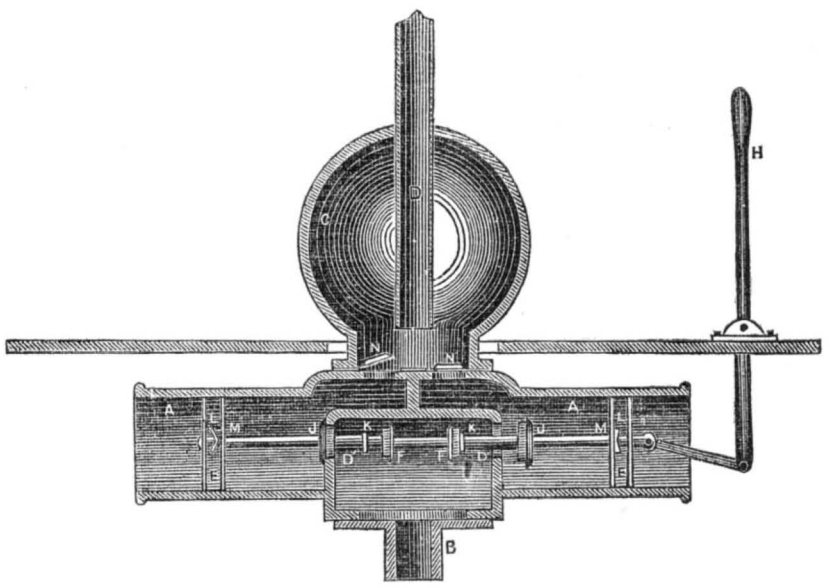
Reported New Steamship.

It is reported that there is a young gentleman of great wealth, in this city, who has invented some improvements on steam ships that will enable him to cross the Atlantic in less than four days. We doubt the success of the scheme—it is too good news to be true. About ten years ago, we remember, the celebrated steamboat called the "Dove," which, on paper, was to go to Albany in four hours. We like to see men of wealth, however, devoting their genius and money to scientific experiments—a far more commendable course of action, than squandering it in luxurious living or political chicanery—for assuredly some good will be performed in the one case, whereas nothing but evil will be committed in the other.

Improved Slitting Machine.

At Liverpool, near Syracuse, N. Y., Messrs. E. and T. Ring have set up their patented machinery (they being the proprietors of Bryant's Patent) for slitting barrel hoops and such like purposes. They can slit 40,000 hoops in one day, and as many feet of white oak for clapboards, where that timber is cheap. They can slit all of 40,000 laths per day, and it can be used for many other purposes, such as splints for surgery, &c. This new machinery, we have been informed, is the most perfect of any other in the world, for the same purpose. It will be great for some parts of Ohio, where white oak is plenty—and is especially of importance in regions where there is plenty of white elm or good free ash.

JEFFREY'S PUMP.



This pump is the invention of E. A. Jeffery, of Corning, Steuben Co., N. Y., who has made application for a patent. This is a vertical longitudinal section, and exhibits all the parts.

A A are the pump barrels; B is a suction pipe; J J are entry valves; N N are discharge valves; C is an air vessel; D is the discharge pipe; D 1, D 1, are hollow valve stems, sliding on the piston rod, and packed to prevent leakage at F F; K K are stops to prevent the valves from opening too far. E E are pistons, each composed of two discs, the inner one being on the piston rod, and the outer one sliding upon it, the inner discs, M, are piereed with holes which are covered with a valve, L. When the piston is forced inwards the water in the barrel, passing through the holes in the inner disc, into the space between it and the outer one, packs the piston and prevents leakage; as the piston is drawn outwards the pressure of the atmosphere, acting on the outer and moveable disc, compresses the water packing between the two, while its escape is prevented by the closing of the valve, L. If the discs do not fit the barrel sufficiently tight, they may have a flange of leather or india rubber fitted to them, or the two discs may be united by a short cylinder of india rubber, which will effectually prevent the leakage of the water from between the two. H is the hand lever or brake.

The following reasons will show that the pump thus constructed will work better than any heretofore known; first, its barrels are horizontal and its discharge passage lead out of the uppermost parts of the barrels, hence any air which may have entered with the water through the suction pipe, will be first discharged from the barrel, and when the piston arrives at the end of its stroke, the clearance in the end of the barrel and the discharge passage are left filled with water, which being unexpansive does not prevent the barrel from being re-filled entirely from the suction pipe. Second, The entry valves from the friction of their packing, are worked by the piston rod, and are opened and closed without any pressure from the entering or effluent water, hence these valves will always open whether the vertical distance from the pump to the water be small or great, and although working horizontally, will always close at the commencement of the return stroke, whether the barrel be filled wholly or partially with water. To these advantages this pump unites those of a vertical barrel, in which the water floating on the top of the piston, prevents the entrance of external air into the barrel, through leaks in the piston; for by this construction a disc of water, sufficient even, if unreplenished, to supply the leakage for many consecutive strokes, is interposed between the external air and the space within the piston, thus preventing the entrance of even the least quantity of air through the leaks of the piston.

Communications addressed (*p. p.*) to Messrs. E. A. Jeffrey & D. C. Gardner, at Corning, (proprietors) will meet with a gentlemanly and prompt response.

Extraordinary Invention.

A Mr. Appeld has invented a remarkable machine, called the "Centrifugal Pump," for draining marshes, &c., and a most ingenious affair it is. You have heard of the turbine—a small box water-wheel, possessing extraordinary capabilities for work. Well Mr. Appold's model contains such a wheel made of tin, a little thicker, but no larger than a half-penny. This is fitted at the bottom of a square tube dipping into a small cistern containing water, which may represent a lake, &c. The little wheel being made to rotate with great velocity, throws up water rapidity into the tube above itself, until it overflows in a continuous stream at the the top, and the volume of the stream is such as to deliver eight gallons per minute; and, on applying a nozzel, the stream is driven to a distance of twenty feet. This, you will say, is a marvellous effect from so apparently insignificent a cause; but a wheel, about fifteen inches in diameter, exhibited at the same time, will deliver 1,800 gallons per minute; it requires to be worked by an engine of four horse power. Mr. Appold has lately proposed to the engineer of the Dutch Government to fix a similar wheel on the Haarlem Sea, now in process of being drained, by forty pumps, driven by steam. A centrifugal pump of forty feet in diameter would do more work that all the others put together, and would deliver—so the inventor asserts—1,500,000 gallons per minute. With such power at command, one would think we ought never more to hear of ships foundering at sea; and the emptying and reclamation of the Zuyder Zee resolves itself into a possibility.

[The above is from the London Times copied from a Dutch paper. Every little while we see some such *new* invention heralded by the press. This extraordinary pump is no less than two hundred years old, at least. We notice these things to point a moral. There can be no progress without a knowledge of the past.

Railroad in Broadway.

Messrs Editors—Among the many schemes and plans that have hitherto been proposed for a railway in Broadway, we have not as yet seen one that seems to be practicable. We have heard of tunnelling beneath and arching above the street, suspension railway, &c. &c.; but all attended with obstacles that would render them impracticable. However, Mr. Editor, there is a way which will obviate all these hitherto objections, and give us a railway without any obstructions. The plan I propose is to build the road above the sidewalk upon arches as high as convenient, say nine or ten feet—this would not only give us a site for a railway, but would be a good substitute for awnings and a shelter from the weather. In crossing intersecting streets, a suspension bridge could be built. Now all we want is a motive power, which I will propose, providing this meets your approbation.

Respectfully yours, Geo. W. Driggs.

Williamsburgh, Nov. 13, 1849.

[Our proposition was to build a double track on the causeway, in the middle of the street. The idea of Mr. Driggs is good, but there is an obstacle in the way, viz., the consent of the owners of property. By our plan a law could be passed at once, and no payment for property in any shape required for the track; and we must confess that we do not see how an elevated railroad came to be proposed by so many persons. In our humble opinion, (differing from so many ingenious men that have advocated an elevated railway,) we altogether prefer *terra firma*—there are surely less objectionable features to it, than the elevated or under-ground plans.

A word here. We perceive that our predictions about the granite paving of Broadway are beginning to be verified. We will refer more pointedly to the subject by and bye.

Steam on Canals.

Messrs. Editors—Major Harris, of the firm of Hunter & Harris, contractors for the completion of the Chesapeake and Ohio Canal, is fitting up a steam tow-boat for the purpose of towing canal boats upon the canal from Cumberland to Georgetown, or Alexandria; the engine will be of twelve horse power, driving two paddle wheels, each of seven feet diameter, placed at the stern of the boat, one on each side of the rudder, and so constructed that as the wheels revolve, the paddles will always remain in a vertical position, by which it is supposed the swell will operate less injuriously upon the banks.

It has long been my opinion that if ever steam is successfully used upon canals, each boat must carry its own engine; that for freight boats a speed of more than 2½ or 3 miles per hour, is not practicable with safety; and the idea so tenaciously adhered to and so little accomplished, of building a boat that will cause little or no swell, must be abandoned in favor of utile principles, and those who have the direction of canals must protect their embankments by walling or riprap, i. e., covering the slope two or three feet above and below the water line with moderately coarse broken stone, for which 16 perches (of 25 cubic feet) per 100 feet, for a single bank is ample. Economy.

[We respond to the opinions in our correspondent's letter. There are some canals in the world, on which steam is used, and we have seen it tried more than once on the Erie Canal. It is imperatively demanded that a new system of propulsion should be adopted on all our canals. Our canals should be made subservient to the spirit of the age.

Prompted by the powerful competition springing up from American enterprise, the W.I. Mail Co. are about to build several new ships with which to perform the Atlantic voyage at a speed of twelve knots.

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Scientific American

NEW YORK, NOVEMBER 24, 1849.

The Poetry of Discovery.

"New inventions are, as it were, new creations and imitations of God's own works."—BACON.

Inventions are the poetry of physical science, and inventors are the poets. Between the bards of machinery and the bards of literature, there is a strong resemblance; in fact, the same spirit of inspiration dwells in both—they only strike different lyres. How often has the soul of the poet gushed out in burning strains, after listening to some plaintive melody, wild passing midnight wind, or the cadence of some distant water-fall; and from the falling of an apple, did not the soul of the great Newton grasp the realities of gravitation—that law which "binds the sweet influences of the Pleides, and forms the bands of Orion." Who can tell of the dreamings—the wakeful nightly dreamings of inventors, their abstractions and enthusiastic reveries, to create some ballad or produce some epic in machinery. Every schoolboy knows the story of Archimedes—how he ran in nudity through the streets of Syracuse, at the discovery which he made to detect adulterated metals by the displacement of a few drops of water. All great inventors possess the faculty of imagination in a very high degree. Sir Samuel Morland indited songs and sang them with grace and feeling. Sir Humphrey Davy wooed the Muses before he experimented in gases and invented the safety lamp. Telford, the inventor of iron suspension bridges, penned some exquisite verses, and had a soul strung with music and poetry. Many men whose names stand high in the roll of physical discovery and mechanical invention, have been disciples of Homer, and often visited the shades of Parnassus. In the days of old, it seems, the Greeks believed in the close relationship of music and invention, for they tell us that one of their harpers made the very rocks forget their gravity, and dance in good order into the walls of Thebes, where they long remained as monuments of musical power. There are not a few also, who have heard of the good hearted Father Tournemine, who attempted to construct a machine in Paris, which, by the turning of a crank would play various tunes and allay the cravings of hunger without the expense of provisions, either in the shape of roast beef or plumb pudding.

In all ages poetry has had a wonderful influence upon the people of all nations. The Greeks rushed to victory chaunting their wild songs, and the bards of Cambria awoke those strains which were the laws and precepts of that ancient people. Poetry opens up the fountains of the human heart, touches its well-spring of feeling. No wonder, then, that the Celtic chiefs proclaimed their wills through the voices of their harpers; and the prophets breathed their predictions in the loftiest poetic strains. Who can read Isaiah and Jeremiah and not feel the poetry of prophecy. As poetic prophecy has often foretold mighty revolutions among the nations of the earth, it might reasonably be expected that it would sometimes foretel revolutions in social life. This it truly does, but never to our knowledge have mankind looked to it for a prophetic description of those means whereby many such revolutions were to be brought about. The invention of printing, the steam engine, and other machines, have entirely revolutionized social life, but who has looked to poetic prophecy for its predictions about them? Among one of the most remarkable discoveries and inventions of the present day, is the Electric Telegraph. By it, friends can converse together, although separated by thousands of miles, and by it the motions of the heavenly bodies are noted, and intelligence of the same is communicated hundreds of miles by one astronomer to another, without the least perceptible down having fallen from the wings of Time. Surely this is a most wonderful invention, and we all know that it is but a few years old. But it may surprise our readers to know that the magnetic telegraph was distinctly described by poetry hundreds of years before it was invented. It is stated in Vail's history of Telegraphs, that the first electric telegraph mentioned was that of a Mr. Lomond, in France, in 1787, who, with wires and an electric machine, communicated with a person in a neighboring chamber. But let us turn to a more ancient telegraph than this: "Strada, the Critic, in one of his profusions, in the person of Lucretius, gives an account of a chimerical correspondence between two friends by the help of a certain loadstone, which had such a virtue in it that if it touched two several needles, when one of the needles so touched began to move, the other, though at ever so great a distance, moved at the same time and in the same manner.

He tells us that the two friends, being each of them possessed of one of those needles, made a kind of dial plate, inscribing it with the four, and twenty letters, in the same manner as the hours of the day are marked on the ordinary dial-plate. They then fixed one of the needles, on each of these plates, in such a manner that it could move round without impediment, so as to touch any of the four and twenty letters. Upon their separating from each other into distant countries, they agreed to withdraw themselves punctually into their closets at a certain hour of the day, and to converse with one another by means of this new invention.

Accordingly, when some hundred miles asunder, each of them shut himself up in his closet at the time appointed, and immediately cast his eye upon the dial-plate. If he had a mind to write anything to his friend, he directed his needle to every letter that formed the words which he had occasion for making a little pause at the end of every word or sentence, to avoid confusion.

The friend, in the meanwhile, saw his own sympathetic needle moving itself to every letter which that of his correspondent pointed at. By this means they talked across whole continents, and conveyed their thoughts to one another in an instant, over cities or mountains, seas or deserts."

The above extract is taken from Addison's 119th paper, in the Guardian, which was published in July, 1713, and Strada died in 1649, exactly two hundred years ago. He was the author of Poetical Profusions, and teacher of Eloquence in Rome. Hitherto we have been talking about inventors being poets, but here is poetry becoming invention. Strada could not have described the signalling-magnetic telegraph more faithfully, if he had lived and examined that of Wheatstone in our own day. Was not this production of Strada the prophetic poetic invention of the Magnetic Telegraph? From this we learn that "coming events sometimes cast their shadows before," and as Strada's chimerical friends used no wires for their telegraph, may it not be possible that some inventors will yet discover the secret of dispensing with them altogether—this would be the greatest discovery of all.

The Law of Patents.

The Charleston, S. C., Mercury, of the 13th inst., says that we misunderstood the meaning of the two articles which were published in the Mercury, and part of which we copied into our columns, in relation to the conduct of the Federal Court in the case of Motte vs. Bennett, about the infringement of the Woodworth Patent. The MISTAKE was not *intentional*, as the Mercury gentlemanly premises. We agree with the Mercury on the point, that it is *not* the *practice* of the English Court of Chancery to grant perpetual injunctions when validity of the Patent, or infringement is denied. The Mercury states that it only referred to perpetual not interlocutory or provisional injunctions, which it states were always customary to be granted by the Court, until the question was tried at law. The following is the spirit of the article in the Mercury:

"The question before the Court, and the only one discussed by the defendant's counsel, and the only one reviewed by us, was as to a perpetual injunction—a final decree. It is this: Is it 'the course and practice of Courts of Equity' in England, in a patent case, where the defendant denies the validity of the patent or the fact of infringement, one or both, to grant a perpetual injunction, and make a final decree, without a trial at law and the verdict of a Jury? Judge Wayne asserts the affirmative—we the negative. Judge Wayne says: 'The English Chancery will show that for more than eighty years, injunctions, both provisional and interlocutory, and perpetual, have been granted in the first instance in cases of copyrights and patents: and that when they have been perpetual in the first instance, they have been made so without the intervention of a jury to try the question of title or infringement.' We deny this altogether. The English Chancery shows nothing of the kind."

A number of cases are cited from the ablest English authority to prove Judge Wayne wrong, and it recommends Congress to purchase a few copies of Hindmarsh on Patents for the uses of the Judges of the Supreme Court. Were it not that there is so much about patents in this number we would publish the whole article. Next week, however, we will publish from a work by one of the best living English Patent Attorneys, the Practice of the English Courts, which will be found to accord exactly with the views of the Mercury.

Interesting Patent Cases.

MACHINE FOR MAKING LEAD PIPE.

On the 12th inst., in the U. S. District Court, New York, before Judge Nelson, a very important case was decided by a verdict in favor of the defendants. The case was an action for an infringement of a patent granted to B. Tatham, Jr., on Oct. 11, 1841, for improvements in the manufacture of lead pipe machinery. The defendants were Thomas O. Le Roy and David Smith, who were using a machine under a patent granted to Samuel G. Cornell, Aug. 21, 1847. The plaintiffs alledged that Cornell's improvements for which the patent was granted to him, consist of transpositions of the parts of their machines and were not substantially different from those described in their patent. The defendants alledged that their machine was not only substantially different from that of the plaintiffs, but possessed very great advantages over all lead pipe machines heretofore known. It appeared in evidence that the defendants, by employing one half of the pressure necessary to work the other machines, could make three times the quantity of lead pipe that could be made by any other method.

The trial occupied the court five days, and Judge Nelson, in charging the Jury, gave a very lucid and learned history of machinery for making lead pipe. Both the patents of plaintiff and defendants were for improvements on a machine invented by Thos. Burr, in 1820 This case has been the subject of litigation for a long time, and there was a great excitement created among our plumbers and those connected with the business. Attorneys of fame were employed on both sides. For the plaintiff, Messrs. Cutting, Staples and Goddard; for defendants, Messrs. Stoughton, Noyes and Harrington.

PLANING MACHINES.

On the 13th inst., before Judges Grier and Kane, U. S. Circuit Court, Philadelphia, the injunction granted against the machine of Barnum was dissolved upon the following conditions: 1st, That the injunction be dissolved, if defendant gives a bond in $10,000, within ten days, to account for all profits. 2d, That the injunction shall stand if defendant does not give such security within ten days, and plaintiff within ten days thereafter give additional security to indemnify defendant.

The case now stands as it should have stood when application for an injunction was made. We took the ground "that no injunction should have been granted." Our opinions were founded upon our views of the Patent Laws, and a knowledge of the case. We were honestly sincere in all the remarks that we have made, and we view such questions, keeping individuals out of sight entirely, and look upon the case entirely on its own merits. We seldom are far wrong in our predictions—they are generally fulfilled. See our views on Patent Laws on page 46, this Vol., Sci. Am.

ELECTRIC TELEGRAPH CASE.

On the 24th of last month an injunction was to be moved for by the owners of Morse's Patent, to restrain the use of Bain's Electro-Chemical Telegraph as an infringement of Morse's Patent. The parties were to be heard before Judge Munroe, at Frankfort, Ky., but the plaintiffs never argued the question, but abandoned the motion. We predicted that no injunction *could* be granted. We see that some papers have made a very serious charge against the Patent Office, in respect to Morse's Chemical Telegraph Patent, stating that as it was issued, it was very different from what it was when argued and decided upon by Judge Cranch.

We are very cautious about how we express ourselves in respect to patents. Our mind is perfectly unbiased, and we look only upon the just rights of every inventor. We therefore cannot endorse any of the insinuations against the Patent Office. We only call attention to the fact, in order to call out an explanation, if the charges are groundless, knowing that the public look to this paper as a vehicle for such information.

We have a few words of advice to give to patentees and the owners of patent rights. We believe that in a great number of cases the owners of certain patent rights have been *weakly wise* in prosecuting others, and many very selfishly tyranical, in endeavoring to restrain the use of any machine in the line of their patents, whether, in their eyes an infringement or not, in order to keep the trade in their own hands. Some act upon the high-handed principle of frightening poor men out of their wits from using what they know is no infringement of their patents. We have faith to believe that justice will triumph ultimately over such men. The rights of one inventor, be he rich or poor, are just as good as those of another, and we often think that it would be far wiser for some patentees to give their money and energies to the fair competition of their patents in business, than to be eternally jabbering at law. We only speak of those inventions that are palpably different. We go for pursuing patent plunderers to the utmost extent of the law, "to hunt them up with hound and horn." In giving our opinions upon the Electro Chemical Telegraph, and the controversy between Morse and Bain, we will say that we have examined the drawings of both Telegraphs, and it is our opinion that however serious the former parties may be, yet we would say, it was not wisdom—it is not wisdom, to carry on a systematic prosecution. The beautiful Electro Magnet Telegraph of Morse is good against the world, and it will stand its own—and it would be policy, we think, to stand by it alone, for the claim of Prof. Morse's Chemical Telegraph, as published, would not operate at all—it claims the production of marks upon a conducting medium interposed between the broken parts of a *galvanic* circuit. Now no marks can be produced when the galvanic circuit is broken, it and the metalic circuit are two different things. It was a mistake, no doubt, in the person who made the claim. But why should these companies quarrel, with the telegraph trade but in its infancy—they all will become wealthy—wealthy.

Depth of the Ocean.

We have received a number of communications on the depth of the ocean, its density, and the *impossibity* of leads sinking to the bottom, &c. They are all written in a friendly spirit, but we cannot publish them, because no new fact is brought forward, and we do not wish to publish assumptions for facts. One says that the great length of line would float the lead at a certain depth. This we do not doubt, but that is not a mathematical objection. Every body knows that a kite would not ascend if strung to a *hawser*. Another mentions the currents as a compressing force to prevent the lead from sinking. Well, we make no objections to that, only let us first know the depth, number, and velocity of these currents, and then we will be able to say more about them. The subject of currents is a branch of nautical science but in its infancy, thanks to Lieut. Murray for making it a science.

Communications.

We have not a few communications in our columns this week, of the right kind. Short clear and comprehensive. We believe that our correspondents in general understand the law of *multum in parvo*.

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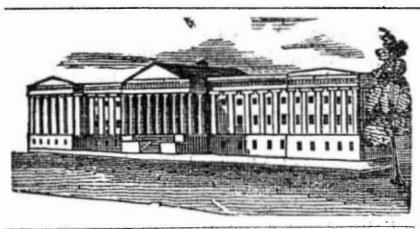

LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending November 13, 1849.

To James Anderson, of Louisville, Ky., for improvements in Hemp Machines.

What I claim therein as new and for which I desire to secure letters patent, is the combination of the grooved rollers, brake and scutchers, or scrapers substantially in the manner and for the purpose set forth.

I also clalm the scrapers when employed with any other feeder that shall hold the material firmly while being scraped.

To Josiah B. Anderson, of New York, N. Y., for improvement in Pessaries.

What I claim is the attachment of two stems by hinges to a circular rim; and which two stems may be combined into one stem with two branches by means of a tube or socket, to be slid upon the lower end thereof in the manner herein before fully set forth.

To Charles C. Bier, of New York, N. Y., for improvement in Portable Water Closets.

What I claim therefore is the construction and use of the arrangement of levers (five) in combination with, and operated upon by, the foot and seat boards of a water closet, for the purpose of opening the pan, in the lower basin or traps of a water closet, and regulating the supply of water to the closet reservoir, also the construction and use of the levers (three others) and weighted lever, in combination with the foregoing arrangement of levers, and operated upon by the seat board, for continuing the operation of supplying the water to the basins from the closet reservoir.

To Thos. S. Bourshett, of Little Falls, N. Y., for improvement in cast-iron Car Wheels.

What I claim is the combination of the curved hollow arms with the hollow rim made semicircular on its inner part, and hollow curved hub enlarged and forming a continuation of the flaring of the inner ends of the arms for causing all the parts of the wheel to accomodate themselves to each other in shrinking or cooling, substantially in the manner and for the purpose herein set forth.

To M. C. Bryant, of Lowell, Mass., for improvement in binder pulleys for Belts and Brakes.

What I claim is, first, to communicate power to machines used for extracting liquids from other matter by means of a movable binder pulley and a slack belt, the binder pulley being pressed upon the belt by a shifting weight as herein described.

To Goldsmith Coffeen, of Warren Co., Ohio, for improvement in Ice Cream Freezers.

What I claim therein is freezing cream or other liquids by forcing through them currents of air chilled by passing them through chambers artificially cooled, substantially as set forth.

To Daniel Custer, of Southampton Township, Pa., for improvement in Seed Drills.

What I claim is the controling of the springs by means of the ring in the manner and for the purpose herein set forth.

To Francis Degen, of New York, N.Y., for improvements in Curling Hat Brims.

I do not, herein, claim to have inven ted the steam heater, nor to be the first who has employed the shaping cloth with the spring and cord, nor do I claim to have invented any one of the mechanical parts described as used herein irrespective of the manner in which I have adapted, or combined them for these purposes, except the entire curler piece which I have been the first to invent and use. But I do claim as new, first, the exclusive application of a changeable curler or former piece that entirely surrounds the hat crown and acts on the whole of the brim, and the combination therewith of the pieces (two) the yoke, swinging standard, the cam and lever, to hold a hat in such a manner that the workman may iron and finish the curl on the edges of the brim, at one operation, effected substantially as described and shown.

Secondly, The combination with the foregoing parts of the winch the lines and hooks to draw or turn the cloth on and over the edges of the hat brim and turn the edges of the hat brim, over the edges of the curler piece and hold them there while the workman irons them so as to set them as described and shown.

Third, I claim the application of the metal cooler piece for the purpose of cooling the hat brim so rapidly that the brim shall not have time to warp or change the form previously given to it; the shape of such cooler being conformable to the size and shape of the hat brim so as to present an even bearing to the under side of the hat brim while cooling, substantially as described and shown.

To Thomas Finlay, of Cold Spring, N. Y., for improvement in regulators for Water Wheels, etc.

I do not claim the conical drums, endless belt and governor, these having been long known as a means of changing speed; but I claim the employment of these or analogous arrangements in connection with the loose cog wheel, herein described, as the means of causing the revolution of said cog wheel to exceed or fall short of the revolution of said water mill, or first mover, whenever such water mill or first mover, shall exceed or fall short of its speed.—The consequence of this variation, through the agency of the screw bolt, crank and movable plate (which parts I also claim in combination with those above mentioned), being either to enlarge or contract the jet apertures and thereby to increase or diminish the speed of such water mill or first mover in accordance with the necessities of the case, this I claim, arranged substantially as set forth not limiting myself to the particular form and connection of the individual parts whilst I attain the same end by analogous means.

To Chas. Hartshorne and Wm. B. Shaw, of Gardiner, Me., for improvement in machinery for turning right and left lasts.

We do not claim to be the original inventers of the principle of cutting and turning lasts or other irregular formed bodies by means of a series of revolving cutters, guided by a pattern or models corresponding in form with the article to be cut or turned, as this principle is common property and has been for many years, but what we do claim as our own invention is, First, the mode of cutting a right and left last (or other article) simultaneously from a single reverse pattern and two blocks of wood, by the before described combination and arrangement of a reverse model tracer, wheel and single wheel of rotary cutters moving in opposite directions, the tracer wheel being in contact with the reverse model whilst the cutters turn between the two pieces of wood to be turned into a right and left last. The latter turning simultaneously in opposite directions inward or outward against the cutter wheel.

To J. B. Klein, of New York, N. Y., (Assignee of Chas. Hartung, of Beichlingen, Prussia,) for improved safety sliding breech fire arm.

What I claim is, first, the method of locking the breech pin when inserted to prevent it from turning by means of the sliding bar, substantially as described, and this I also claim in combination with both or either of the methods of securing the breech pin by the screw thread and the inclined face of the breech pin tube substantially as described.

Second, Combining with the sliding breech pin and the discharging punch which slides therein, or the carrier thereof, the spring catch for holding the punch back during the operation of loading substantially in the manner and for the purpose specified.

And I also claim this method of holding the discharging punch or the carrier thereof, with the trigger substantially in the manner and for the purpose specified.

Third, The combination of the sliding bar which locks and unlocks the breech pin with the catch of the breech pin, which holds and liberates the discharging punch, substantially in the manner and for the purpose specified.

To Lewis Lillie, of Troy, N.Y., for improved means of changing the combination in revolving tumbler locks.

What I claim is hanging the series of rotating tumblers in a hinge or vibrating frame their outer periphery being provided with cogs which gear into the cogs of the series of tumblers connected with the stationary lock plate, so that when the said frame is elevated the tumblers of the other series will be free to turn in order to suit any variation in the set of the key.

To John Kellogg, of Madison, Ohio, for improvement in connecting Hubs to Axles.

What I claim is the introduction of the rod with the nib working into the cavity, in the manner and for the purpose herein set forth.

To Chas. Perley, of New York, N. Y., for improved method of fitting the heaving socket and head of windlasses.

I do not claim any of the parts herein described and shown, irrespective of the manner in which I have applied them. But I do claim as new and useful in effect, the application of the loss with the wrought metal band and square acting with the bush to connect the windlass head with the shaft and at the same time support the heaving socket and flanch in such a manner, that either the head or the heaving socket and flanch, or both can be immediately displaced when injured; the whole constructed and operating substantially as described and shown.

[The bosses with square and round parts are not claimed in themselves by Mr. Perley, but the combination and arrangement, so that either separately, or both parts, if injured, may be removed and replaced immediately by new parts.]

To Sylvanus Sawyer, of Templeton, Mass., for improvement in machinery for splitting and dressing Rattans.

What I claim is the principle and combination of the vibrating cutter, and guide; to use any number required to remove the whole surface of the cane or rattan, dividing the surface into any required number of strands.

To Chas. Slawson, of Norwich, N. Y., for improvement in Leather Dressing Machines.

What I claim is, first, the adjustable endless apron in combination with the scraper or extender, for the purpose and uses as herein described.

Second, The adjustable scraper or extender as described for the purposes and uses of leather dressing, as herein set forth.

To Ferdinand Zisemann, of St. Louis, Mo., for improvement in Brick Presses.

What I claim is, first, the combination of the revolving conical Duster with the rotating moulding and pressing wheels, constructed, arranged and operated in the manner and for the purpose herein set forth.

Second, I also claim the combination of the rotary toothed wheel, with the moulding wheel for driving the pistons to the bottom of the moulds, after the bricks are discharged therefrom, constructed, arranged, and operated in the manner and for the purpose herein described; said wheel being turned by the action of the moulding wheel in contact therewith, without the aid of any connecting cogged or band gearing.

Third, I also claim the manner of increasing the pressure on the clay whilst in the moulds, to form the brick, by diminishing the distance between the peripheries of the moulding and pressing wheels, by causing the pressing wheel to descend in the arc of a circle of a radius greater than the semi-diameter of the moulding wheel, the bearings or boxes of the axle of the pressing wheel, being secured to the parallel beams, whose outer ends are made to rise in the arc of a circle, concentric to the arc, by means of vertical screws, arranged to bear against the under sides of said beams, to raise or lower the pressing wheel, in order to increase or diminish the pressure on the bricks in the mould, as aforesaid.

DESIGNS.

To Johnson & Cox, (Assignee of S. Clark,) of Troy, N. Y. Design for Stoves.

[There are three separate patents for different designs, by S. Clark, all assigned to the enterprising firm of Messrs. Johnson & Cox, of the above place. We would publish the claims, but as they refer, like all design claims, to the configuration, no idea of them could be obtained. We therefore only state that the patents were granted.]

The political parties of New York and Tennessee, are exactly balanced in their Legislatures, on joint ballot. The best and closest sitters will exhibit the best generalship.

Planing Machine Patent Cases.

(Continued from page 71.)

JACOB P. WILSON *vs.* DANIAL BARNUM.—In Circuit Court U.S., Eastern District of Pennsylvania. Issued directed from Chancery.

The patent for this invention was first issued in 1828 to Mr. Woodworth, it has been renewed by the Patent Office, and afterwards by an act of Congress; and on the 8th of July, 1845, the original patent was surrendered on account of some alleged defects in the specification, and an amended patent issued. After having withstood twenty years of litigation, and received the sanction of Congress, the attempt to annul it, on the ground of the want of originality, should be considered hopeless, and be received with little favor by the court.

The issue submitted to you, therefore, is not to try whether W. Woodworth was the inventor of the machine described in the amended patent, but "whether the making, vending and using of either or both, separately or in combination, and if either, which of the machines of the defendant referred to in his answers in this cause, *is, or is not* an infringement of the amended letters patent granted to Wm. W. Woodworth, and set forth in complainant's answer (bill) in this cause."

A question of infringement is a question of fact; and it is for this reason that it is submitted to a jury as the most competent tribunal to settle such a question, but although a question of fact, and to be decided by comparison, it is often a most difficult one.

It may involve questions of science or of arts with which the court and jury are not familiar, and witnesses of knowledge and experience may differ in their opinions.

Principles of law may be involved, and a clear apprehension of them necessary to a correct conclusion.

In the statement of these principles, whether of mechanics or law, terms are often used which are vague, indefinite, or so difficult of definition, that their application to the facts may lead to erroneous conclusions, unless great care and discrimination be exercised. Hence the opposite conclusions which are often arrived at by men of equal knowledge, experience and skill, and thus it often assumes the appearance of a matter of opinion and not of fact.

In the application of the principles of law and mechanics, which complicate the question of fact, there is no one word which is used more vaguely, and more difficult of a definition of universal application, that the word "*principle*" itself. You have heard much of the "*principle*" of a machine both from witnesses aud counsel. The word is most commonly used to signify elementary truth or established doctrines, when we speak of law or any other science. But when applied to a complex machine, whatever notion we may represent by the term, or whatever definition we may give of it in the abstract, will be found difficult of application in many instances in the concrete. While many minds will arrive at correct results by comparison of things in the concrete, they are incapable of analysing the process of reason, or explaning in abstract terms how they have arrived at the result. Another difficulty in the definition of this and other abstract terms is, that when defined, some of the terms of your definition are of the same subtile, slippery and indefinite meaning with the subject of the definition.

A learned judge, in speaking on this subject says: "The forms of the two machines differ but when at work, the principle is the same, that is, both have the same peculiar structure and constituent parts, which is the true legal meaning of the principle of a machine." (Per Justice Wayne, in Mott v. Burnit, quoting Burnit v. Hall, 1 Mason, 470.)

"The principle of a machine," says Mr. Justice Story, (1 Gallison, 458,) "is the modus operandi; the peculiar device or manner of producing any given effect. If the same effects are produced by two machines by the same mode of operation, the principles of each are the same. If the same effects are produced, but by combination of machinery operating substantially in different manner, the principles are different."

(To be Continued.)

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TO CORRESPONDENTS.

"E. R., of N. Y."—Yours of the 14th inst., accompanied by the specification, &c., of your improved scraper has been received. In regard to rights we are of the opinion that you had not better sell rights until the patent is issued. You can do so conditionally if you choose.—Nothing will prevent you from manufacturing them for sale.

"J. C., & G. F. F., of Vt."—We shall attend to your wheel as soon as possible.

"Rev. J. D. S., of Ky."—Dr. Hull's subscription expires with No. 26, this Vol. We cannot direct you where the missing numbers of Vol. 1 could be obtained. We have none on hand, which we regret very much.

"J. N., of Pa."—The model of your steam chest has been examined, and the principle is doubtless good. We are, however, doubtful in regard to an application for a patent being successful. The elements combined do not appear to be substantially novel, and we think it would be difficult to base a claim that would be granted by the Patent Office. We will add that the advantages of your chest over others, are not clearly set forth in your communication. If it could be done our views might be somewhat modified.

"H. J. B. C., of N. C."—We have received your numbers for binding—will endeavor also to procure you such a work as you want. Shall write you soon.

"N. E. C., of Ct."—We cannot give you any advice in the matter referred to. The money can be passed over to your credit according to your suggestion.

"J. L., of N. Y."—We do not see any advantages in your castor. Allowing it (the ball) to play universally in the socket with no axis, it would be difficult to overcome the friction, especially when much pressure should be applied.

"J. E, R., of N. Y."—The drawings and description of your alledged improvements in saw mill blocks have been examined. Timothy Jones of Otis, Mass., filed a description, and drawing, in the Patent Office early last season, of the same principle as that described by you. He employed the rack and pinion for moving the blocks, together with a lever, as set forth in your drawings. We cannot, therefore, advise you to spend money in making an application.

"B. A., of Mass."—If your pump performs as well as you say it does, no doubt can exist of its value. We are at a loss, however, to understand its true principles of operation, from the drawings furnished. Each part should have been well described, then we should have had no trouble in understanding it. We advise that you construct a small operating model, and send it to us for further examination, or make other drawings and describe every part thoroughly.

"I. R. C., of Mass."—We cannot give you the information asked for. Would it not have been better for you to have addressed the advertiser without troubling us. We have all we can attend to without his business.

"L. B., of Vt."—In answer to your question in regard to the "American Oil," as to where it can be obtained, price, &c. We refer you to the article itself—when carefully read you will observe that we asked for the information sought by you. If we hear anything more in relation to it we intend to give our readers the benefit of it.

', M. E. W., of Ill."—Wheeler's endless chain horse powers have been highly spoken of. One horse power, price $75—two horse, $100. Bogardus' Circle is also good—price not known. Warren's Circle is very good—two horse, $50; four horse, $80. Since you seek our opinion in the matter, we give it by expressing our unqualified preference in favor of Daniel Woodbury's Patent, Rochester, N. Y. The principle is well known to us. For further particulars address the patentee.

"C. B. H. and A. M. B., of N. Y."—If your engines are constructed upon a plan entirely different from any other in use, and express novelty, you can obtain a patent. We could give you a very correct idea of its patentability by examining a model. You are aware that much has been done in this branch of the art.

"M. C., of N. H."—It is difficult for any one to say what has not been done in the way of stoves—patent upon patent has been granted for them. The simplicity of your plan recommends it—the simpler the better. We presume a patent could be obtained for it. You had better send a model without delay.

"H. G. W., of N. Y."—The model of your alledged improvement in propellers has been examined. We are doubtful about your obtaining a patent for it. The principle is the same as the duck-foot propeller, patented in 1845. Although we are of the opinion that Earl Stanhope used it years ago. Hebert, in his work on the steam engine, describes the fan propeller, embracing the same principle as found in your model. Some two years since a gentleman from Washington Co., this State, left a model at this office, which operated like yours, but was made of leather and whalebone, instead of using metal and hinges. A patent could not be obtained for this plan. There exists such a similarity between your principle and those above described, that we could not advise you to apply for a patent.

"J. M. O'B., of Me.—"We shall be happy to receive *your* communication. Let it be as as condensed as possible. All the information you ask, you will find in the charge of Judge Grier. Mr. Muir mentions rollers, but he did not use a revolving cylinder, like Woodworth, with them. The Judge clears up the matter.

"J. M. W., Canada."—Your remittance came safe—the money is par with us for subscriptions: the requests have been attended to and you will find everything right.

"U. N., of Ct."—Please forward one of your shaves to this office with a full description. We will then advise you as to its patentability.

"W. L. N., of Ohio."—By reference to No. —, Vol. 5, you will find a notice of a boring machine, patented by Mr. Jones, of Camden, N. J. We judge from your description that your invention embraces the same principle.

We have received a letter from Mr. Paine, of Worcester, Mass., in answer to "Gior." It will appear next week. It came a little too late for this number.

"C. D. R., of Mass."—There is no loss of power in the crank, in our opinion. The friction created by your crank, sliding in the slot, would be very great. The plan, however, so far as we know, is new. In your other plan, we do not see how any advantage could be gained: gear wheels should always be avoided in the steam engine. But the plan is new.

"J. S., of Pa."—In looking over a number of works on copying, we find that the modifications of the pantograph are very numerous.

The specifications and drawings belonging to individuals with the following initials, have been filed at the Patent Office since our last issue:

J. & L. A., of Mass.; E. R., of N. Y.; R. C., of O.; J. D., of N. J.; J. I., of N. Y.; J. H. L., of N. J., and R. & S., of N. Y.

Money received on account of Patent Office business, since Nov. 16th, 1849:—

J. C. & G. F. F., of Vt., $50; E. R., of N. Y., $20; J. & L. A., of Mass., $25; J. P., of N. J., $30; J. I., of N. Y., $10; J. H. L., of N. J., $20; H.. S., of N. Y., $30; A. H., of Ill., $30, and R. & S., of N. Y., $35.

Notice.

We refer our subscribers to No. 5 of this Vol. for particulars in relation to back numbers. We would also say, that whenever our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

ADVERTISEMENTS.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

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Lancaster, Pa.	J. F. REIGART.
Lynn, Mass.	J. E. F. MARSH.
Middletown, Ct.	WM. WOODWARD.
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Nashua, N. H.	N. P. GREENE.
New Bedford, Mass.	J. W. PERCE.
Nashville, Tenn.	A. MCKENZIE.
Norwich, Ct.	SAFFORD & PARKS.
New Haven, Ct.	E. DOWNES.
Newburg, N. Y.	S. A. WHITE.
Newark, N. J.,	J. L. AGENS.
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Rochester, N. Y.	D. M. DEWEY.
Raleigh, N. C.	W. WHITE, JUN.
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Salem, Mass.	L. CHANDLER.
Southport, Wis.	J. S. BRADLEY.
Savannah Geo.	JOHN CARRUTHERS.
Syracuse, N. Y.	W. L. PALMER.
Taunton, Mass.	W. P. SEAVER.
Utica, N. Y.	G. H. BEESELEY.
Vicksburg, Miss.	J. B. HAYES.
Warren, Ohio,	C. J. VAN GORDER.
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BRUSH'S IMPROVED DOUBLE ACTING LIFT AND FORCE PUMP.—The subscriber is now manufacturing and has constantly on hand, an extensive assortment of Lift and Force Pumps, to which he would call the attention of owners of factories, breweries, ships, steamships, or for railroad stations and farmers, as one of the most powerful pumps ever yet invented. Persons in want of a good article (the price is within the reach of all) are invited to call on the subscriber at his manufactory.

10 10* J. A. BRUSH, 83 Pike Slip, N. Y.

TO PRACTICAL MACHINISTS.—The advertiser having perfected an original invention—a new hydraulic motive power, (which has occupied his attention for four years) and finding his means exhausted, is desirous of obtaining the assistance of an influential machinist to bring the invention into notice and use. References of the highest respectability can be given. Communications (post paid) addressed C, box 421 St. Louis, Mo., will receive prompt attention. 9 2*

THE SUBSCRIBER, late of the firm of Haldeman & Seitz, of Marrietta, Pa., formerly engaged in the manufacture and sale of Bridle Bits, has bought out Mr. Seitz in the whole Patent Right and stock on hand. Therefore he now offers to machinists, and dealers generally, the opportunity of buying low, the patent right for States, Counties or Districts in any part of the United States, for the remaining term of the patent right, the date of which is September 26, 1848. Persons buying rights can also be supplied with a small stock to commence the business upon at once, as he is still finishing up the stock on hand in the different styles of japaning, tining and plating. He will still supply the old customers in what stock they may want at reduced prices, until their neighborhood is supplied by new manufacturers.

Any orders either for rights, samples or information will be promptly attended to by

CYRUS S. HALDEMAN,
Bainbridge, Lancaster Co., Pa.

[See Engraving of the above Bit in No. 26, Vol. 4, "Sci. Am."] 9

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Scientific Museum.

The Progress of Invention.

The arts were the offspring of necessity. The first labor is enforced by natural want; then to rudeness succeeds convenience, and afterwards elegance and nicety. As formed by Nature, man is helpless and unprotected; but spurred by the necessity of his situation, he calls his intellect into exercise and invents; and thus arise in succession the useful and ornamental arts. Surrounded by images of the beautiful, the proportionate, the graceful and the sublime—by objects, every one of which appeals, suggests, and incites, he discovers laws and bodies forth ideas. The substances placed at his disposal are of a nature to conspire with the harmonies and glories of creation to invite him to an exercise of his skill. But comply with natural he must, even while emulating her beauties.

The character of genius is productive and inventive; but the power of invention is the result of acquired habits and not the original gift of nature. To represent truth in a sensible form—to bring to light some new idea, is the object of invention; the contrivance for producing an effect, the invention itself. But there must be

An egg before an eagle, a thought before a thing,
A spark struck into tinder to light the lamp of knowledge

All which truly exists is a series of antecedents and consequents; hence invention requires acuteness to discover hidden aptitudes, and shrewdness to follow on the trial by guessing on the hint. Success in invention sits at the head of a long flight of stairs.

Nature, in her productions slow, aspires
By just degrees to reach perfections height;
So mimic art works leisurely, till time
Improve the price, or wise experience give
The proper finishing.

Invention, therefore, is progressive. The telegraph is not the work of one man, but the "concrete wisdom of the wisest." All great works form a series. "One soweth, and another reapeth." In the division of labor, it is found that, without any preconcerted scheme, the hewn and sculptured stones, which the laborers have brought from their respective quarries, only need to be put together to form a magnificent temple of the most harmonious proportions. An effect argues a cause; a falling apple, gravitation. There is greatness in a trifle. Some natural object or incidental discovery is often found to be susceptible of extensive application to the affairs of life. Every department of modern science exhibits illustrations of the complicated and remote correspondences between the objective system and the preconceptions of the mind. A truth requiring, in order to its discovery, a degree of elaboration and abstraction of which few are capable, is often found when elicited to admit of a number of useful applications, to which all are competent. We should contemplate, therefore, the experiments of scientific men, not as a waste of time, or the mere gratification of an idle curiosity, but as embodying the germs of those improvements, by which civilization, domestic comfort, knowledge, and moral principle may be diffused among the nations.

Every machine is a combination of antecedent inventions, and the progressive stages through which they have to pass ere they arrive at their final state of perfection, is truly astonishing. One illustration will suffice. Previous to the year 1767, every thread used in the manufacture of cotton, wool, and flax, throughout the world, was spun singly by the tedious process of the distaff and spindle. Now, from the genius of Hargraves sprung the eight-handed spinster; to this succeeded the spinning-frame of Arkwright; and five years' labor, the happy thought of combining the principles of the two inventions struck the fertile mind of Crompton. By more finished mechanism, the machine was made to exercise a Briarean power. Then Kelly yoked to it the strength of a rapid river; and Watt, with the agency of steam, moved an iron arm, that whirls arounds 10,000 spindles. Finally, to consummate the wonder, Roberts dismisses the spinner, and leaves the machine to its own infallible guidance. These successive improvements were but the applications of former inventions. Consider now the numerous parts and subordinate contrivances in this series of machinery; how many principles were discovered and countless inventions made, ere the mechanical fingers of this automaton were formed unceasingly to move, and with unfailing precision, patience, and strength, convert into use this staple of our country.

J. W. O.

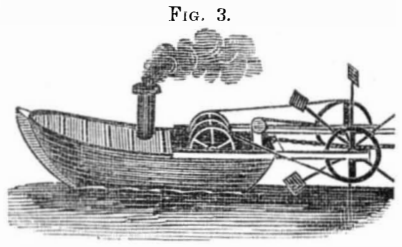
History of Propellers and Steam Navigation.

[Continued from page 72.]

PAPIN, WORCESTER, SAVERY, ALLEN, HULLS.

One of the most eminent and ingenious men that ever lived was Dr. Papin, a Frenchman. Both Papin, Savery and the Marquis of Worcester, proposed to propel vessels by steam power applied in some way to paddles, but the testimony which is left to posterity of their contrivances for that purpose, is so unsatisfactory and vague that little can be made out of it.

FIG. 3.

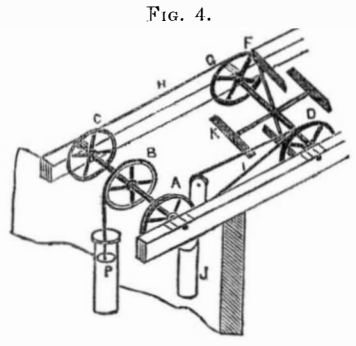


In 1726, a Dr. John Allen published a work in London, in which he proposed to propel a vessel by having a horizontal pipe open at the stern, into which air or water was to be forced, to force the boat forward by its re-action. The Doctor tried his scheme on a boat upon a canal, and he states that if steam was used as a power he had no doubt but it could be moved at the rate of three miles per hour.

The first patent on record to propel a vessel by steam power, is that of Jonathan Hulls, who published a pamphlet in 1737, describing it, and for which posterity is not a little obliged to him. Some have claimed for him very high honor. His invention is certainly a nearer approach to a steamboat than all that had been invented before him, but without an opinion expressed, for or against, his steamboat is here presented.

The mind of Hull looked only to the use of his boat as a means of towing other vessels out of harbor against tide and winds, a purpose for which they are now greatly used in every part of the world.

FIG. 4.



As there have been many plans brought forward as substitutes for the crank, it may be news to many, to be told that the crank was not the first contrivance used to convert a reciprocating into a rotary motion, but it was adopted from its beautiful simplicity after many other plans failed. Hulls mode of converting the reciprocating motion of the engine into a rotary one, is depicted in the annexed diagram, fig. 4; in which A, B, C, are three wheels, on one axis; and D, E, two others, hung loose on a parellel axis, with ratchet wheels attached, so as to move the axis only in the forward direction. P is the piston of an atmospheric steam-engine, connected to the middle wheel, B, by a rope passing round the latter. H is another rope, connecting the wheels C, E, so that both must move in the same direction; and I is a rope which connects the wheels A, D, diagonally, so that they move in opposite directions. The rope I, proceeding from the wheel A, is continued round the wheel D, and passed over a small pulley; a weight, C, being suspended from the end of it. When the piston decends, the wheels A, B, C, move forward: and, by the ropes I, H, turn the wheels D, E; that is, the wheel E forward and the wheel D backward. The paddles K are therefore moved round, in a forward direction, by the wheel E; while, at the same time the weight, J, is raised by the wheel D. When the piston is, in the next place, ascending, the motion of the whole is reversed, except that of the paddles, which are moved in the same direction, by the action of the descending weight J, upon the wheel D. By this alternate action, the axis A, B with the paddle-wheel, is constantly moved round in the same direction, and by an equable force.

This is the first paddle wheel driven by steam power, and the idea of placing the wheel in the stern occurred to the inventor as being the proper place for it, "because that water fowl, ducks and geese pushed their web feet behind them.

(To be Continued.)

To Reproduce Photographic Impressions.

The image is received in the camera obscura on a plate of silver, strongly iodized; the plate is then exposed to the vapour of mercury, but not to the action of hyposulphite of soda. It is then plunged into a solution of sulphate of copper, placing it for a few instants in communication with the negative pole of a battery and closing the circuit with a platina wire.—The copper deposits itself only on the parts covered by the mercury. The iodide of silver not being a conductor of electricity. The plate is then washed with distilled water, then with the hyposulphite of soda to remove the iodide, and quickly dried over a spirit lamp. The image, in which the copper represents the light parts and the silver dark, is transferred, at least the copper, on very thin plates of gelatine.—An inverted image is thus obtained, since the copper, which is opaque, represents the light parts. The transfer is made by running on the plate a clear solution of gelatine, and allowing it to dry; after which the gelatinous foil on which the copper adheres, is attached. The negative proof obtained, the next part of the process is, to re-produce a positive image; for this purpose a sheet of photographic paper is taken, on which is carefully applied the proof in gelatine the face on which is the copper underneath. The whole is then exposed to diffused light during a quarter of an hour; the paper is then plunged into water in order to be washed, and then into a solution of hyposulphite of soda to remove the salt of silver; it is then washed in a large quantity of water and dried, by this a perfect and positive reproduction of a daguerreotype image is obtained. If it be desired to obtain the reproduction of a drawing or an engraving, a negatieve proof is taken on a prepared iodized plate, in placing it over the design or engraving and exposing the whole to the light. It is then passed through the mercurial process and the series of operations above described.

Enamel for Pins, Hooks and Eyes, &c.

The articles to be enamelled, after being thoroughly cleaned and freed from dust and dirt are spread or placed in a basin dish, or other fit receptacle, where they are wetted with the spirit or oil of turpentine; they are then dried, if required, by artificial means; when dry, the enamel or japan is applied, it taking effect and spreading a coat upon the whole of those parts of the articles previously covered by the turpentine; should it be required to give the articles more coats than one, the same process of applying the enamel is to be repeated but omitting to apply the spirit of turpentine. The compositions are as follows for blue, the best varnish or gums, three-quarters of a pint; of spirits of turpentine, half-a-pint; flake white, 1 lb., and prussiate of iron, 1 oz.; for red, —Persain vandyke, 1 lb.; varnish or gums, half-a-pint; spirits of turpentine, quarter of a pint; for green,—pale chrome, ¼lb.; varnish or gums half-a-pint; spirits of turpentine, quarter of a pint; other colours or tints may be composed and applied in like manner by varying or altering the proportions of the materials.

Mr. J. Galbraith, of Wisconsin, has undertaken to introduce the cultivation of flax into that State. He has been about two years in Wisconsin, and is well versed in the methods followed in Ireland, Holland and Belgium. His first trial was made at Musquinago, with 50 acres, and this year he has harvested the products of 100 acres. The fabric is stated to be quite equal to that of Irish and Belgian flax.

LITERARY NOTICES.

GODEY'S LADY'S BOOK.—The December No. of this popular Magazine has been received, and is truly a superb number. Godey has surpassed his usual elegance this month, and produced a better number than has ever issued from a periodical press in this country. It contains 100 pages of reading matter from the pens of forty different contributors, and 24 engravings—some of which are very fine: "The Secret," a mezzotint, by Welch, is a charming picture; and the engraving of Mrs. Jos. C. Neal, with her pretty face and easy attitude, is perfectly bewitching. A new volume of Godey commences with the next No., and we assure those who subscribe to it that they will never regret it. Messrs. Dewitt & Davenport, Agents, Tribune Buildings.

HOLDEN'S DOLLAR MAGAZINE, December No.: W. H. Deitz, Publisher. New York.—This unrivalled and justly popular monthly, comes to us as usual, filled with choice contents. The view of Maux, on the rail road between Paris and Epernay, constitutes the leading feature of this No. It also furnishes a good likeness and biography of Geo. P. Morris—well known to literary fame. Dr. Peck, an eminent divine of the Methodist denomination, is also represented in looks, character and qualifications. This number completes the volume, and our sincere wish is that its present conductor will find his efforts repaid by a largelist of subscribers.

PICTORIAL NATIONAL LIBRARY. Wm. Simonds, Publisher: Boston.—The November No. of this valuable miscellany of art, science and literature, has appeared upon our table. The plan of this work is extensive, embracing all the subjects profitable for the human mind to study, and is worth all the trash of the novel school ever published. It is a matter of regret that a work of such real and substantial merit as this, and kindred publications, cannot fully supply the place of insane literature to a greater extent than it does at present. We are pleased to know that the Library has a large circulation.

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